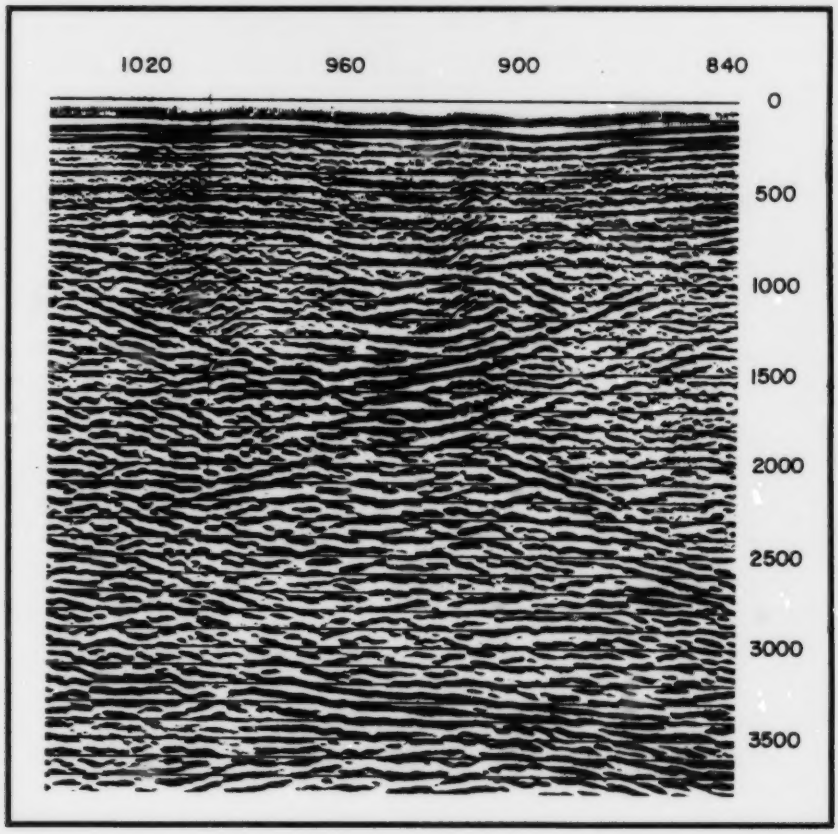
New Nouveau
Brunswick

Natural Resources and Energy
Mineral Resources

Geoscience Report 90-1

Reflection Seismic Coverage of Onshore and Offshore New Brunswick 1948 - 1989

Three-D GeoConsultants Limited



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Geoscience Report 90-1

Reflection Seismic Coverage of Onshore and Offshore New Brunswick

1948 - 1989

Cover Photo:
This seismic section is part of line 82-29-21 1, profile 1574-780 (from Mineral Resources Plate 90 - 97B). The seismic survey was carried out by Chevron Canada Resources Limited over its Northumberland prospect in 1982.

This report has been prepared by:

Mineral Resources
Department of Natural Resources and Energy
Province of New Brunswick

Hon. Morris Green
Minister of Natural Resources and Energy

Hon. Edmond P. Blanchard
Minister of State for Mines

December, 1990

New Nouveau
Brunswick

Natural Resources and Energy
Mineral Resources

Geoscience Report 90-1

Reflection Seismic Coverage of Onshore and Offshore New Brunswick

1948 - 1989

Three-D GeoConsultants Limited

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9 February 1990

New Brunswick Department of
Natural Resources and Energy
Geological Surveys Branch
P.O. Box 6000
Fredericton, N.B.
E3B 5H1

Attention: L.R. Fyffe

Dear Mr. Fyffe:

RE: Reflection Seismic Coverage of Onshore and Offshore New Brunswick, 1948-1989; Report 8907-1

I am pleased to submit the final edition of this report. In addition to the bound copy, an unbound original including the original plastics for the maps and a diskette of the text in WordPerfect 5.0 have also been submitted. The report can be updated by simply adding survey summary sheets to the report since the surveys are listed chronologicallly.

Yours truly,
THREE-D GEOCONSULTANTS LIMITED

D. Ball

Dwight Ball
President

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NOTE

The plates accompanying this report (Appendix 1) are reductions of plates originally drafted at a scale of 1:250 000. The full-size plates are available separately by requesting the following plate numbers:

Plate 90-156. Seismic Coverage, Eastport, Map Sheet 21 B with northwest corner of Annapolis, Map Sheet 21 A
90-157. Seismic Coverage, Fredericton, Map Sheet 21 G
90-158. Seismic Coverage, Amherst, Map Sheet 21 H
90-159. Seismic Coverage, Moncton, Map Sheet 21 I
90-160. Seismic Coverage, Woodstock, Map Sheet 21 J
90-161. Seismic Coverage, Bathurst, Map Sheet 21 P

REFLECTION SEISMIC COVERAGE OF NEW BRUNSWICK 1948-1989

ABSTRACT

Onshore and offshore reflection seismic surveys completed in New Brunswick between 1948 and 1989 have been summarized and plotted on 1:250 000 maps. The report focuses on deep bedrock profiles that have yielded useful stratigraphic and structural information. The data compilations include the geographic location of all surveys, details on format, and availability of the data.

RÉSUMÉ

Les études de réflexion sismique côtières et extracôtières effectuées au Nouveau-Brunswick entre 1948 et 1989 ont été résumées et reportées sur des cartes à l'échelle 1/250 000. Le rapport porte principalement sur les profils du substratum rocheux profond qui ont fourni d'intéressantes données stratigraphiques et structurelles. Cette compilation fourrit l'emplacement géographique de toutes les études ainsi que le détail des formats et de la disponibilité des données.

INTRODUCTION

Each survey was assigned a Survey Index Number based on the chronological order of completion of the survey. The index numbers tie the survey summaries to their locations shown on the six seismic coverage maps in Appendix 1 (Plates 90-156(R) to 90-161(R)). These maps are indexed in Figure 1. Individual survey lines have not been plotted because in some seismic programmes they are too closely spaced when plotted on a 1:250 000 scale map. Instead, only the boundary of the survey area is shown.

Boreholes for which down-hole sonic logs are available have also been plotted on the accompanying maps. Each borehole is assigned a reference number, which, along with the name of the hole, is recorded in the legend of the map. Additional geophysical logs are available for the boreholes shown. Boreholes without sonic logs are not shown on the maps; however, a complete list is contained in a catalogue of well data for boreholes in southern and eastern New Brunswick (St. Peter 1987).

All projects within the New Brunswick portion of the Bay of Fundy are included and, for the sake of completeness, survey areas and lines on the Nova Scotia side of the Bay are also depicted. All surveys completed in the Northumberland Strait north of Cape Tormentine are listed as are those in the Gulf of St. Lawrence west to 64° longitude. No surveys are known to exist in the Bay of Chaleur south of 48° latitude. A number of shallow penetration surveys have been completed nearshore (<50 m water depth) for purposes of bottom-sediment profiling and bedrock surface delineation. They are listed in Appendix 2. Earth and Oceans

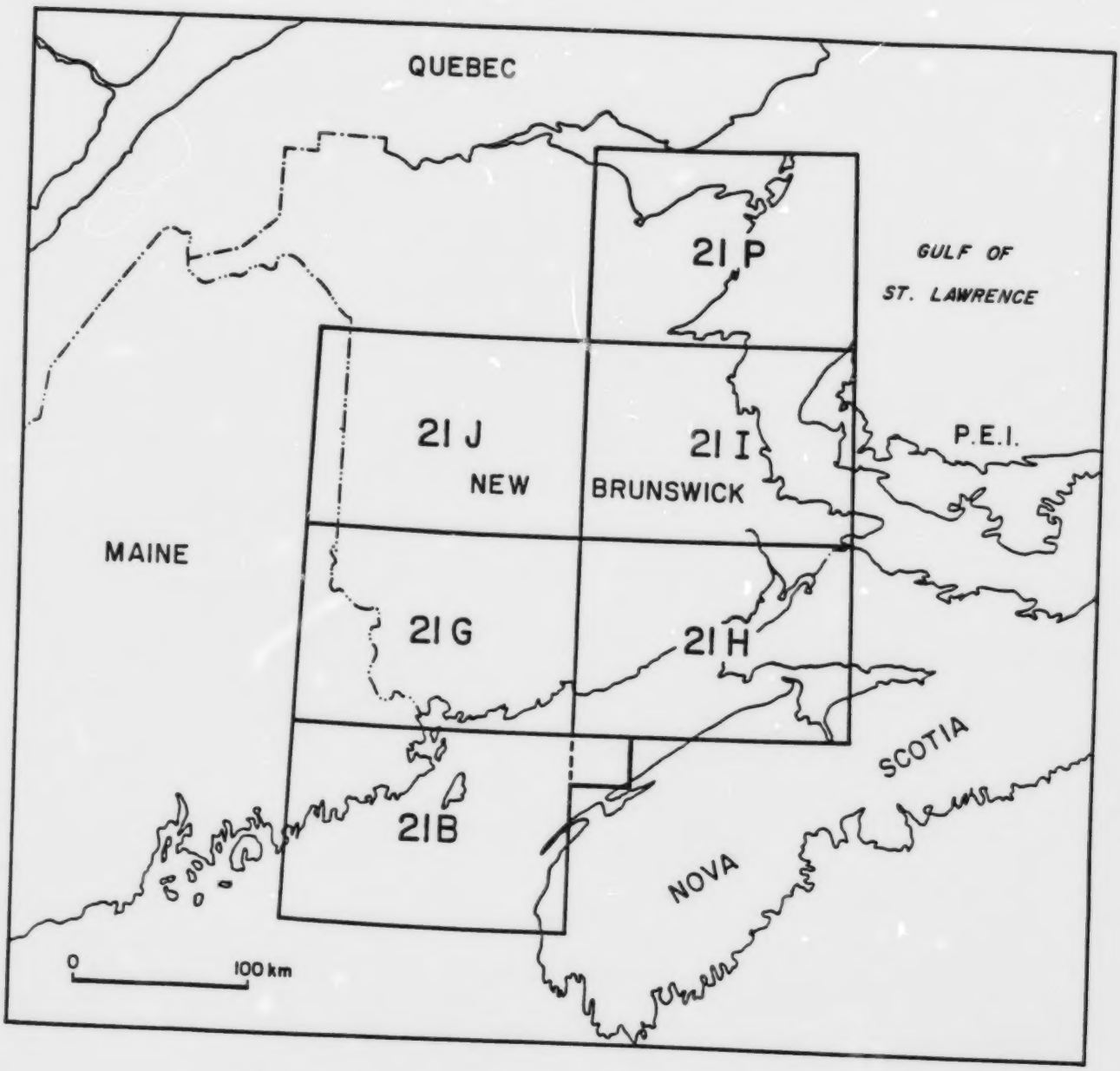

Figure 1. Index to seismic coverage maps in Appendix 1.

Research Ltd. (1988) described them in detail.

Various reports and files held by the New Brunswick Department of Natural Resources and Energy were utilized to prepare the compilation. These are referenced on the appropriate survey summary sheet. In addition, the Department has produced a number of detailed shotpoint and line location maps (Martel 1986a and 1986b). Several of the companies who commissioned the various surveys were contacted and have supplied specific information. Similar compilations have been undertaken by the Nova Scotia Department of Mines and Energy (McMahon 1988); the Atlantic Geoscience Centre of Energy, Mines and Resources, Canada (Durling, personnel communication, 1989); and the Canada Oil and Gas Lands Administration (Bigelow 1988).

This report is not intended to be the final source of information for all users. Those requiring hard data must acquire it directly from the appropriate repository listed in the summaries. All of the surveys completed by private sector corporations are public information since their periods of confidentiality have expired. However, this does not mean that all the data are either held by or available from the appropriate repository.

SEISMIC SURVEYS

SURVEY INDEX NO. 1

MAP SHEET: 21 H and 21 I

AREA: New Brunswick Platform and Moncton Subbasin

DATE OF SURVEY: 1948 and 1949

COMPANY: Shell Oil Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Unknown

TYPE OF STUDY: a) refraction
b) reflection

COVERAGE: a) 56 km
b) 160 km

DATA: Unknown

DATA AVAILABILITY: Unavailable

REFERENCE: Gussow (1953)

NOTES: A discussion of the surveys and geologic cross sections based in part on the seismic survey are presented by Gussow (1953).

SURVEY INDEX NO. 2

MAP SHEET: 21 H and 21 I

AREA: Moncton Subbasin east of Petitcodiac and northern portions of the Cumberland Subbasin in New Brunswick

DATE OF SURVEY: February-July, 1958

COMPANY: Imperial Oil Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Seismograph Service Corporation of Canada

TYPE OF STUDY: **Reflection.** Charges, 11 to 36 kg of dynamite per charge; 316 shotholes; 716 profiles

COVERAGE: 128 km

DATA: Details of data acquisition are unknown.

DATA AVAILABILITY: Copies of the profiles are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch.

REFERENCES: Bunker (1958); Harlow (1958)

NOTES: Western Decalta Petroleum Ltd. attempted, unsuccessfully, in 1973 to reprocess the Imperial data.

SURVEY INDEX NO. 3

MAP SHEET: 21 B, 21 G, 21 H

AREA: Bay of Fundy

DATE OF SURVEY: 1966

COMPANY: Geological Survey of Canada

PURPOSE: Assumed to be to determine unconsolidated sediment thickness and/or bedrock profile

CONTRACTOR: Unknown

TYPE OF STUDY: **Marine reflection.** 165 Joule sparker source, 4 sparks/sec

COVERAGE: Ship's track is plotted on accompanying maps

DATA: Acquired via a Huntec Mark 2A Hydrosonde profile system, filtered at 152-2329 cps

DATA AVAILABILITY: Unknown. No data at Atlantic Geoscience Centre. The cruise was directed by D. Swift of Dalhousie University; therefore, the University may hold additional data.

REFERENCES: Durling (1989); Swift et al. (1971)

NOTES:

SURVEY INDEX NO. 4

MAP SHEET: 21 I, 21 P

AREA: Northumberland Strait and Gulf of St. Lawrence

DATE OF SURVEY: 1967

COMPANY: Hudson's Bay Oil and Gas Co. Ltd. (HBOG)

PURPOSE: Assumed to be petroleum exploration

CONTRACTOR: Uncertain, Delta Exploration Co. Inc. is a possibility

TYPE OF STUDY: Marine reflection. Vibrator source

COVERAGE: 3077 km

DATA: Hard copy on plastic and microfilm; reported as poor to fair quality

DATA AVAILABILITY: Profiles for lines 1-22 and 30-35 are available from the Atlantic Geoscience Centre and Canada Oil and Gas Lands Administration, Ottawa (COGLA Project #8620-H7-2E); lines 1-22 are most relevant to New Brunswick.

REFERENCES: Bigelow (1988); Marillier and Durling (1989); McMahon (1988)

NOTES: HBOG marine seismic completed in 1967 in Northumberland Strait approaches Cape Tormentine (Map Index No. 8; McMahon 1988).

SURVEY INDEX NO. 5

MAP SHEET: 21 P

AREA: Gulf of St. Lawrence (Magdalen and Anticosti Basins)

DATE OF SURVEY: 1967

COMPANY: Delta Exploration Co. Inc.

PURPOSE: Assumed to be petroleum exploration

CONTRACTOR: Unknown

TYPE OF STUDY: Marine reflection

COVERAGE: 2 lines, 1023 km in total

DATA: Unknown

DATA AVAILABILITY: Unavailable; COGLA Project #8624-04-1P

REFERENCES: Bigelow (1988); Marillier and Durling (1989)

NOTES:

SURVEY INDEX NO. 6

MAP SHEET: 21 P

AREA: East and west of Magdalen Islands

DATE OF SURVEY: 1968

COMPANY: Amoco

PURPOSE: Assumed to be petroleum exploration

CONTRACTOR: Unknown

TYPE OF STUDY: Marine reflection

COVERAGE: Portions of 2 lines plot on map sheet 21 P; total survey consisted of 27 lines, 1023 km

DATA: Good quality; format is unknown. COGLA Project #8624-A4-4E

DATA AVAILABILITY: Unavailable. Amoco will not release any of the data.

REFERENCES: Bigelow (1988); Marillier and Durling (1989)

NOTES:

SURVEY INDEX NO. 7

MAP SHEET: 21 B, 21 G, 21 H

AREA: Bay of Fundy

DATE OF SURVEY: September 4-24, 1968

COMPANY: Mobil Oil Canada Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Mobil Geophysical Services Centre

TYPE OF STUDY: 12-fold marine reflection. Diesel gun source, 12 second cycle (10-50 cps); 2377 m, 24 trace steamer cable

COVERAGE: 613.8 km; 6.5 second depth

DATA: Recording equipment included T.I. Seismic Digital Field System 283 Recorder. Processing was completed inhouse by Mobil in Dallas, Tx., and consisted of static and normal moveout corrections, time variant filtering, deconvolution and stacking. Data quality reported by Mobil as poor and interpretation speculative.

DATA AVAILABILITY: Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy.

REFERENCES: McMahon (1988); Mobil Oil Canada Ltd. (1968)

NOTES: Gravity and magnetic surveys conducted concurrently.

SURVEY INDEX NO. 8

MAP SHEET: 21 B, 21 G, 21 H

AREA: Bay of Fundy

DATE OF SURVEY: September 8-25, 1969

COMPANY: Mobil Oil Canada Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Mobil Geophysical Services Centre

TYPE OF STUDY: **12-fold marine reflection.** Diesel gun source, 12 second cycle (10-50 cps); 2377 m, 24 trace streamer cable

COVERAGE: 1437.6 km

DATA: Recording equipment included T.I. Seismic Digital Field System 283 Recorder. Tape processing was completed inhouse by Mobil in Dallas, Tx., and consisted of static and normal moveout corrections, time variant filtering, deconvolution and stacking. Data quality reported as good.

DATA AVAILABILITY: Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy.

REFERENCES: McMahon (1988); Mobil Oil Canada Ltd. (1969)

NOTES: Sonobuoy refraction, gravity and magnetic surveys conducted concurrently.

SURVEY INDEX NO. 9

MAP SHEET: 21 B, 21 G, 21 H

AREA: West end of Bay of Fundy

DATE OF SURVEY: March 25 to April 3, 1972

COMPANY: Mobil Oil Canada Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Geophysical Associates International

TYPE OF STUDY: **24-fold marine reflection.** Air gun source; 2700 m, 24 trace steamer cable

COVERAGE: 492 km; 5 sec. depth

DATA: Recording equipment included T.I. Digital Field System III. Processing was completed inhouse by Mobil in Dallas, Tx., utilizing techniques outlined by Giesbrecht (1972). Data quality reported as poor to fair by Mobil.

DATA AVAILABILITY: Field and final stacked tapes retained by Mobil, Dallas; Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy.

REFERENCES: Giesbrecht (1972); McMahon (1988)

NOTES:

SURVEY INDEX NO. 10

MAP SHEET: 21 H

AREA: West end of Bay of Fundy; reshoot of specific lines shot in 1972

DATE OF SURVEY: November 27-28, 1973

COMPANY: Mobil Oil Canada Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Geophysical Associates International

TYPE OF STUDY: **48-fold marine reflection.** Air gun source; 2350 m, 48 trace streamer cable

COVERAGE: 167 km; 5 sec. depth

DATA: Recording equipment included T.I. Digital Field System IV recorder. Processing completed inhouse by Mobil, Calgary, utilizing techniques outlined by Gresbrecht (1974). Data quality reported as poor.

DATA AVAILABILITY: Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy.

REFERENCES: Giesbrecht (1974); McMahon (1988); Prevey (1974)

NOTES:

SURVEY INDEX NO. 11

MAP SHEET: 21 H and/or 21 J (not plotted, see NOTES)

AREA: Petitcodiac, Moncton Subbasin

DATE OF SURVEY: July, 1974

COMPANY: Canadian Occidental Petroleum Ltd.

PURPOSE: Oil shale exploration

CONTRACTOR: Dresser Olympic Canada

TYPE OF STUDY: **Reflection.** 0.6 kg dynamite/charge

COVERAGE: 48 km, 3000-4600 m depth

DATA: Recording equipment included T.I. Digital Field System IV recorder. Sections migrated at 4267 m/sec

DATA AVAILABILITY: Interpreted hard copy sections available from New Brunswick Department of Natural Resources and Energy, Energy Branch.

REFERENCES: Gordon (1975)

NOTES: The exact line locations are unknown.

SURVEY INDEX NO. 12

MAP SHEET: 21 H, 21 I

AREA: Moncton Subbasin

DATE OF SURVEY: June-September, 1974

COMPANY: Kerr-McGee Corp.

PURPOSE: Petroleum exploration

CONTRACTOR: Dresser Olympic Canada

TYPE OF STUDY: **Common depth point reflection.** Dynamite source; 48 traces

COVERAGE: 112 km

DATA: Recording equipment included T.I. Digital Field System IV recorder. Processing via Seiscan Delta/G.S.I.

DATA AVAILABILITY: Digital field tapes and field reports available through Kary Data Consultants Ltd., Calgary

REFERENCES: Kary (1989)

NOTES:

SURVEY INDEX NO. 13

MAP SHEET: 21 I, 21 P

AREA: Northumberland Strait

DATE OF SURVEY: November 12-26, 1974

COMPANY: Société Québècoise d'Initiatives Pétrolieres

PURPOSE: Petroleum exploration

CONTRACTOR: Geophysical Services Incorporated

TYPE OF STUDY: **24- and 12-fold marine reflection.** Air gun source

COVERAGE: 911 km total. Durling (1989) refers to 829 km.

DATA: Hard copy sections. Quality reported as fair to good (Anger 1976).

DATA AVAILABILITY: 4 sections included in Anger (1976). Plastic copies of sections 1-19 held by Atlantic Geoscience Centre. Micro-film of sections 1-19 held by COGLA (Project #8620-S14-5E)

REFERENCES: Anger (1976); Durling (1989); McMahon (1988)

NOTES:

SURVEY INDEX NO. 14

MAP SHEET:21 G, 21 H, 21 I, 21 J, 21 P

AREA: Sackville, Penobsquis, Plumsweep, Cassidy Lake, Mill Brook, Lutes Mountain-Wayerton, Penniac and Lincoln

DATE OF SURVEY: June-November, 1978

COMPANY: New Brunswick Department of Natural Resources and Energy

PURPOSE: to determine structure, macrostratigraphy and basement configuration of New Brunswick Platform; to survey known and suspected evaporite structures in Moncton and Cumberland subbasins

CONTRACTOR: Geoterrex Ltd. and Geodigit Ltd.

TYPE OF STUDY: **24-fold shallow penetration, high resolution reflection (Mini-Sosie).** Modified soil compactor source

COVERAGE: 178 km, 1500-2000 m max. depth

DATA: Digital field tapes, final hard copy (plastic) sections, plus all other data generated by project.

DATA AVAILABILITY: All data available from New Brunswick Department of Natural Resources and Energy, Energy Branch

REFERENCES: Steeves and Kingston (1981)

NOTES:

SURVEY INDEX NO. 15

MAP SHEET: 21 B, 21 G, 21 H

AREA: Eastern and western ends of the Bay of Fundy

DATE OF SURVEY: September-October, 1980

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Company of America

TYPE OF STUDY: **36-fold marine reflection.** Air gun source; 2565 m streamer cable

COVERAGE: 807 km shot/792 km processed; 5 sec. depth

DATA: Recording equipment included Kiloseis LRS-16 Marine Telemetry System. Recording parameters as follows - filter (hi cut 450 Hz, low cut 9 Hz), sample rate (1 msec), format (SEG B 1600 bpi PE for array formed data; LRS 288 channel format for uncompacted data).
Hard (paper) copies of stacked and migrated sections produced. North Mountain Basalt is the only continuous correlateable reflection. Data quality of some lines is poor.

DATA AVAILABILITY: Detailed field and recording parameters and hard (paper) copy of all stacked and migrated sections available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary.

REFERENCES: McCormack (1981)

NOTES:

SURVEY INDEX NO. 16

MAP SHEET: 21 I, 21 P

AREA: Northumberland Strait and Gulf of St. Lawrence

DATE OF SURVEY: October, 1980

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Company

TYPE OF STUDY: 48-fold marine reflection. Air gun source; 2519 m streamer

COVERAGE: 1536 km shot and processed

DATA: Recording equipment included Kiloseis LRS-16 Marine Telemetry System. Recording parameters as follows - filter (hi cut 450 Hz, low cut 9 Hz), sample rate (1 msec). Data quality is good to very good.

DATA AVAILABILITY: Plastic originals of migrated stacked sections of the Gulf of St. Lawrence lines from Canadian Oil and Gas Lands Administration, Halifax (COGLA Project #8624-C4-7E). Plastic originals of migrated stacked sections of Northumberland Strait lines from Atlantic Geoscience Centre, Dartmouth

REFERENCES: Durling (1989)

NOTES:

SURVEY INDEX NO. 17

MAP SHEET: 21 B, 21 G, 21 H

AREA: Bay of Fundy

DATE OF SURVEY: August, 1981

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Company of America

TYPE OF STUDY: 48-fold marine reflection. Air gun source; 2565 m streamer

COVERAGE: 654 km shot and processed; 6 sec. depth

DATA: Recording equipment included Kiloseis LRS-16-Marine Telemetry System. Recording parameters as follows - filter (hi cut 450 Hz, low cut 9 Hz), sample rate (1 msec, uncompacted; 2 msec, array formed), format (SEG C 6250 bpi GCR). Migrated sections produced

DATA AVAILABILITY: Detailed field and recording parameters and hard (paper) copy of all migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary.

REFERENCES: McCormack (1982)

NOTES: Gravity survey conducted concurrently

SURVEY INDEX NO. 18

MAP SHEET: 21 H, 21 I

AREA: Moncton Subbasin

DATE OF SURVEY: May-November, 1981

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Ltd.

TYPE OF STUDY: Vibroseis reflection

COVERAGE: 706 km; 4 sec. depth

DATA: Recording equipment included T.I. Digital Field System V/FTI TIMAP Correlating System. Recording parameters as follows - filter (hi cut 64 Hz 72 db/octave, low cut 12 Hz 18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi). Final stacks and migrated sections produced from correlated records

DATA AVAILABILITY: Detailed field and recording parameters, hard (paper) copy of all the final stacks and hard (paper) copy of most of the migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Mineral Resources. Field data available from Chevron Canada Resources, Calgary.

REFERENCES: Augsten (1982)

NOTES:

SURVEY INDEX NO. 19

MAP SHEET: 21 P

AREA: Gulf of St. Lawrence

DATE OF SURVEY: 1981

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Company of America

TYPE OF STUDY: 48-fold marine reflection. Air gun source; 3130.2 m streamer cable

COVERAGE: 698 km shot and processed

DATA: Particulars unavailable. Assumed to be similar to other Chevron marine surveys shot in 1980 and 1981. Data quality is good to very good.

DATA AVAILABILITY: Plastic originals of migrated stacked sections from Canadian Oil and Gas Lands Administration, Halifax (COGLA Project # 8624-C4-9E)

REFERENCES: Durling (1989)

NOTES:

SURVEY INDEX NO. 20

MAP SHEET: 21 G, 21 H

AREA: Eastern end of Bay of Fundy

DATE OF SURVEY: June, 1982

COMPANY: Chevron Standard Ltd.

PURPOSE: Petroleum exploration

CONTRACTOR: Sefel Geophysical

TYPE OF STUDY: 48-fold marine reflection. Air gun source; 2400 m streamer

COVERAGE: 458 km shot and processed; 6 sec depth

DATA: Recording equipment included Geosource MDS-10. Recording parameters as follows - filter (hi cut 62.5 Hz 72 db/octave, low cut 7 Hz 18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi). Final stacks and migrated sections produced from correlated records

DATA AVAILABILITY: Detailed field and recording parameters, hard (paper) copy of all final stacks and migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary

REFERENCES: Case and Badel (1983)

NOTES: Gravity and magnetics survey conducted concurrently.

SURVEY INDEX NO. 21

MAP SHEET: 21 I

AREA: Northumberland Strait

DATE OF SURVEY: June-July, 1982

COMPANY: Petroleum exploration

CONTRACTOR: Sefel Geophysical

TYPE OF STUDY: 48-fold marine reflection. Air gun source; 2400 m streamer

COVERAGE: 100 km; 6 sec. depth

DATA: Recording equipment included Geosource MDS-10. Recording parameters as follows - filter (high cut 62.5 Hz 72 db/octave, low cut 7 Hz-18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi). Migrated sections produced from correlated records. Data quality is good to very good.

DATA AVAILABILITY: Detailed field and recording parameters, hard (paper) copy of all migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary. COGLA holds plastic originals of all lines (Project #8624-C4-13E).

REFERENCES: Durling (1989); Hiebert (1983)

NOTES: Gravity and magnetics survey conducted concurrently.

SURVEY INDEX NO. 22

MAP SHEET: 21 I, 21 H

AREA: Moncton Subbasin

DATE OF SURVEY: May, 1982 to March, 1983

COMPANY: Chevron Canada Resources Limited

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Ltd.

TYPE OF STUDY: Vibroseis reflection

COVERAGE: 741 km

DATA: Recording equipment included T.I. Digital Field System V/FTI TIMAP Correlating System. Recording parameters as follows - filter (high cut 64 Hz-72 db/octave, low cut 12 Hz 18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi). Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY: Detailed field and recording parameters, hard (paper) copy of all the final stacks and migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary

REFERENCES: Feeney (1983)

NOTES:

SURVEY INDEX NO. 23

MAP SHEET: 21 H, 21 I

AREA: Moncton Subbasin

DATE OF SURVEY: September, 1983 to March 1984

COMPANY: Chevron Canada Resources Limited

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Ltd.

TYPE OF STUDY: Vibroseis reflection

COVERAGE: 300.3 km

DATA: Recording equipment included T.I. Digital Field System V/FTI TIMAP Correlating System. Recording parameters as follows - filter (high cut 90 Hz 72 db/octave, low cut 12 Hz 18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi). Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY: Detailed field and recording parameters, hard (paper) copy of the final stacks and migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Energy Branch. Field data available from Chevron Canada Resources, Calgary.

REFERENCES: Guay (1984)

NOTES:

SURVEY INDEX NO. 24

MAP SHEET: 21 H, 21 I

AREA: Moncton Subbasin: Havelock, Elgin, Hillsborough and Sackville areas

DATE OF SURVEY: August-October, 1984

COMPANY: Chevron Canada Resources Limited

PURPOSE: Petroleum exploration

CONTRACTOR: Western Geophysical Ltd.

TYPE OF STUDY: Vibroseis reflection

COVERAGE: 158.6 km

DATA: Recording equipment included T.I. Digital Field System V/FTI TIMAP Correlating System. Recording parameters as follows - filter (hi cut 90 Hz 72 db/octave, low cut 12 Hz 18 db/octave), sample rate (4 msec), format (SEG B 1600 bpi)

DATA AVAILABILITY: Uncertain. Assumed to be similar to previously completed work.

REFERENCES: Morse (1985)

NOTES: Gravity survey conducted concurrently.

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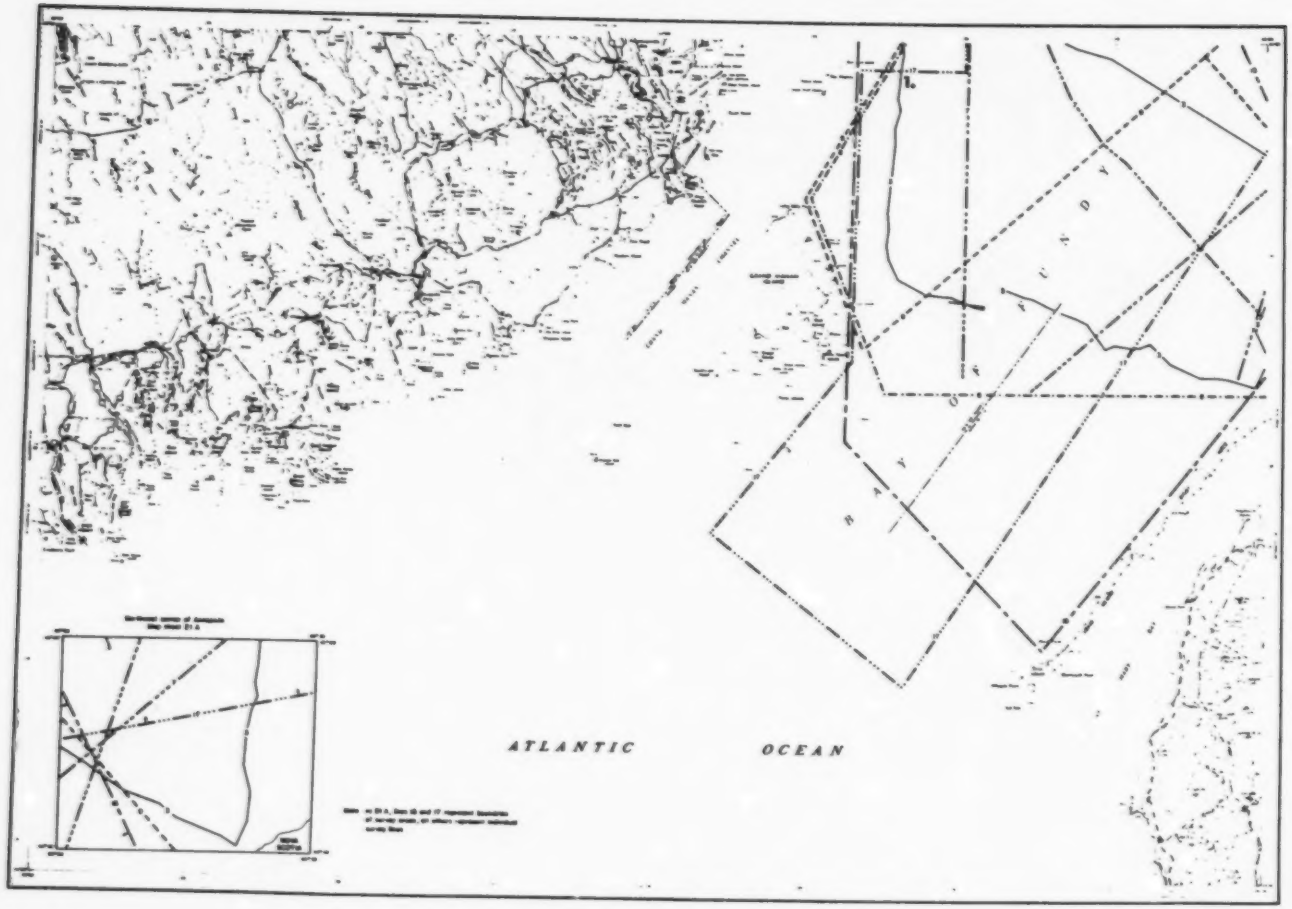
APPENDIX 1.

REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK, 1948-1989

NOTE These plates are reductions of plates originally drafted at a scale of 1:250 000. The full-size plates are available separately by requesting the following plate numbers:

Plate 90-156. Seismic Coverage, Eastport, Map Sheet 21 B with northwest corner of Annapolis, Map Sheet 21 A
90-157. Seismic Coverage, Fredericton, Map Sheet 21 G
90-158. Seismic Coverage, Amherst, Map Sheet 21 H
90-159. Seismic Coverage, Moncton, Map Sheet 21 I
90-160. Seismic Coverage, Woodstock, Map Sheet 21 J
90-161. Seismic Coverage, Bathurst, Map Sheet 21 P



D.N.R.E. PLATE 90-156 (R)

REFLECTION SEISMIC COVERAGE
OF
ONSHORE AND OFFSHORE NEW BRUNSWICK
1948 - 1989

EASTPORT : MAP SHEET 21 B
WITH
NORTHWEST CORNER OF ANNAPOLIS : MAP SHEET 21 A

SCALE 1 : 250,000

LEGEND

Survey Index no.	Symbol	Company	Field field date
1		Geological Survey of Canada	(1948)
7		Mobil Oil Canada Ltd.	(1969)
8		Mobil Oil Canada Ltd.	(1970)
9		Mobil Oil Canada Ltd.	1972
10		Chevron Standard Ltd.	(1980)
11		Chevron Standard Ltd.	(1981)

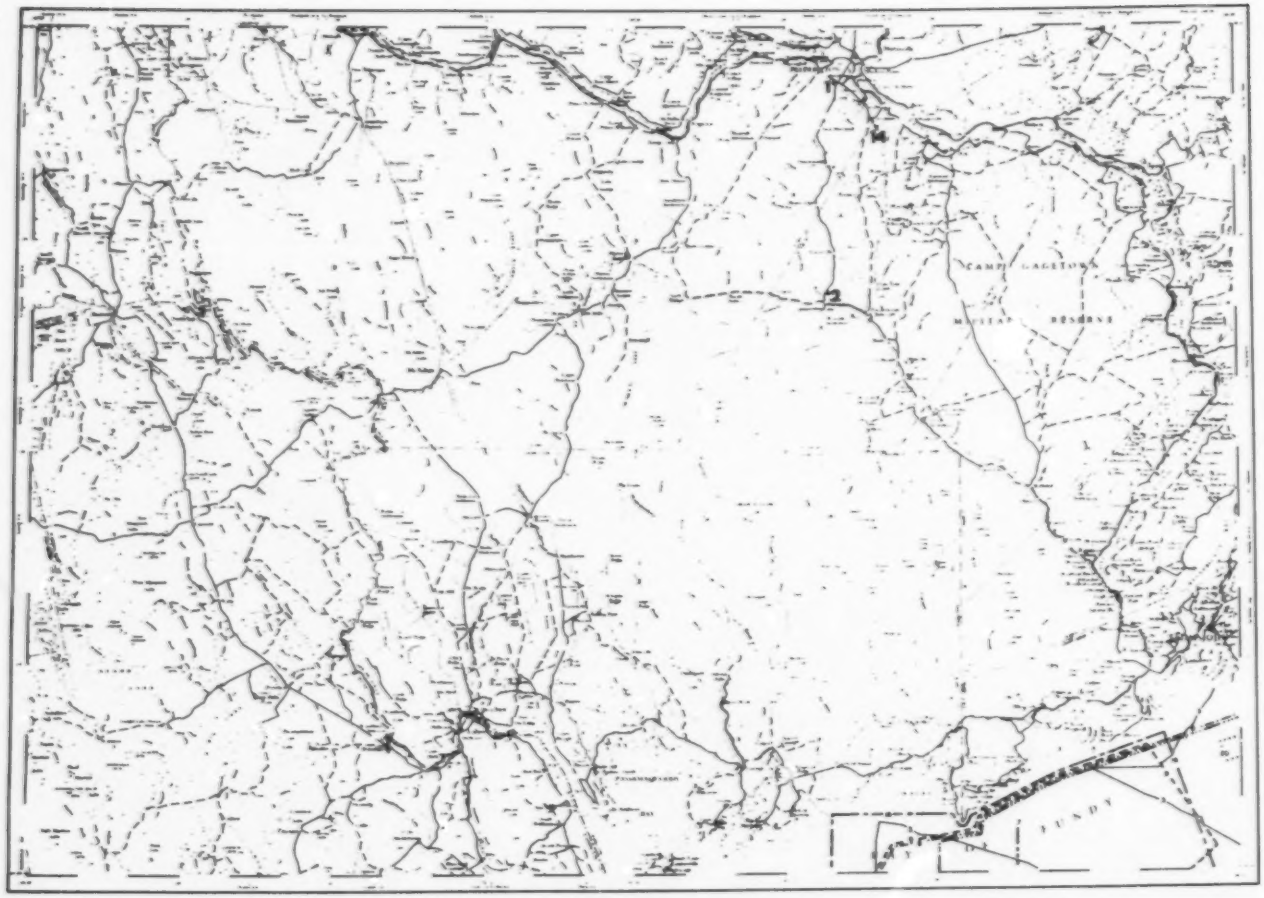
Boundaries with same logo

10 Mobil Chevron 6-37

Prepared by: Veritas-D Geoscience Limited

Prepared for: Geological Survey Branch, New Brunswick Department of Natural Resources and Energy

September 21, 1990



D.N.R.E. PLATE 90-157 (R)

REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK 1948 - 1989

FREDERICTON : MAP SHEET 21 G

SCALE 1 : 250,000

LEGEND

Survey number	Symbol	Company	Year field data
5	———	Geological Survey of Canada	1956
7	— — —	Mobil Oil Canada Ltd	1964
8	— · — · —	Mobil Oil Canada Ltd	1965
9	— — — —	Mobil Oil Canada Ltd	1972
16	———	Chevron Standard Ltd	1980
17	— · — · —	Chevron Standard Ltd	1981
20	·····	Chevron Standard Ltd	1982
Onshore			
14	— — — —	N.B. Dept of Natural Resources	1979

Surveys with seismic lines

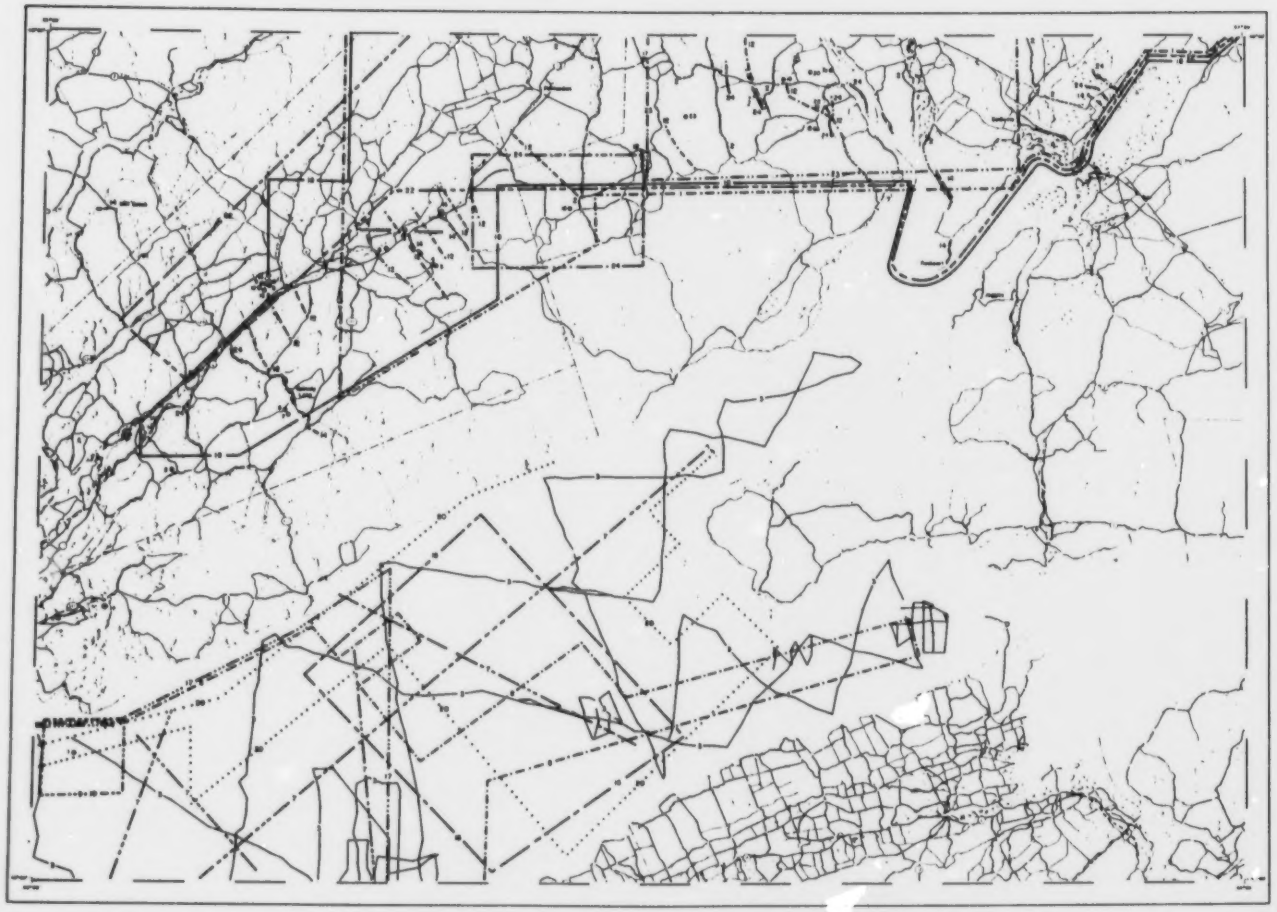
1 b Province of New Brunswick 1969

1 c Province of New Brunswick 1974

Prepared by: Terra-3 Associates Limited

Prepared for: Geological Survey Branch, New Brunswick Department of Natural Resources and Energy

September 30, 1989



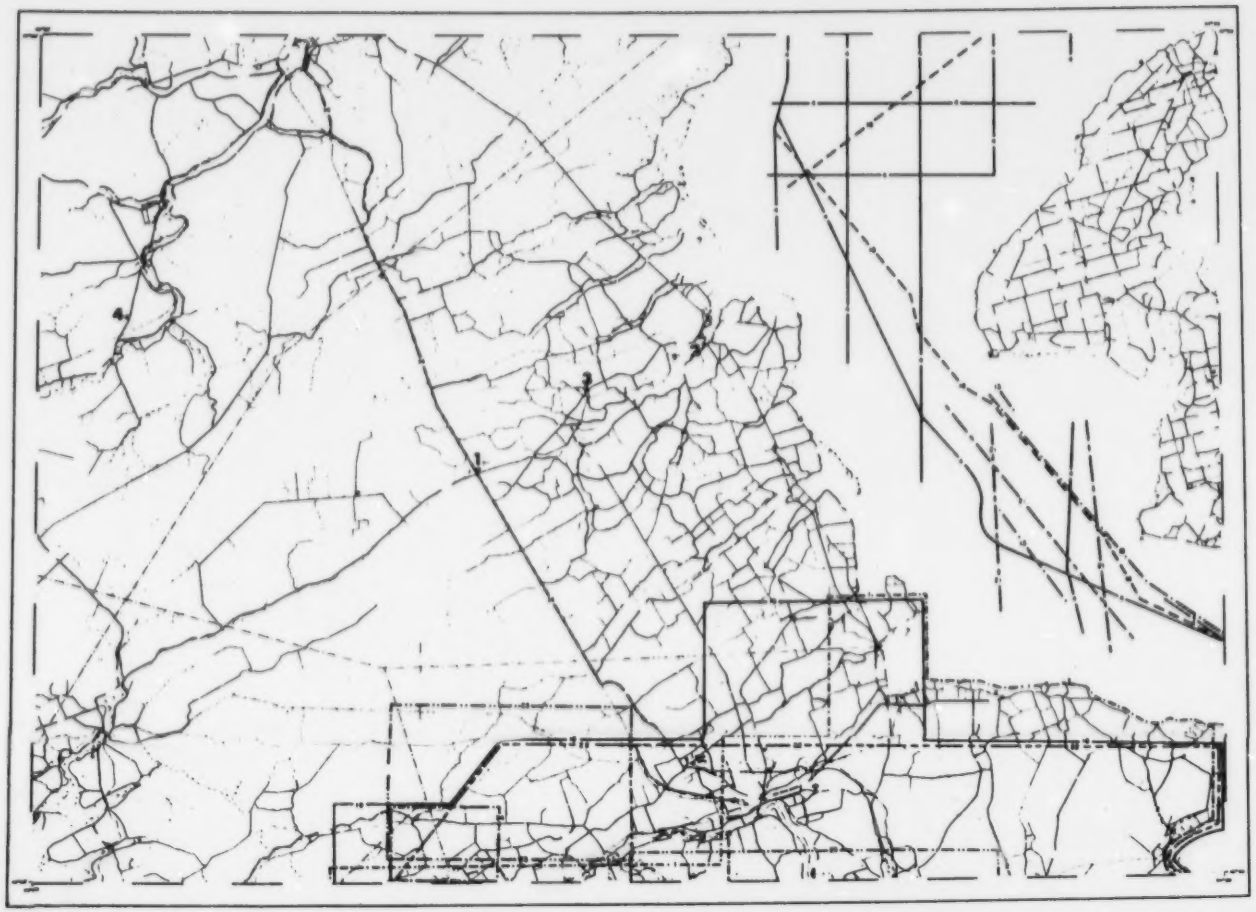
D.N.R.E. PLATE 90-158 (R)

REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK 1948 - 1989

AMHERST : MAP SHEET 21 H

SCALE 1 : 250,000

LEGEND

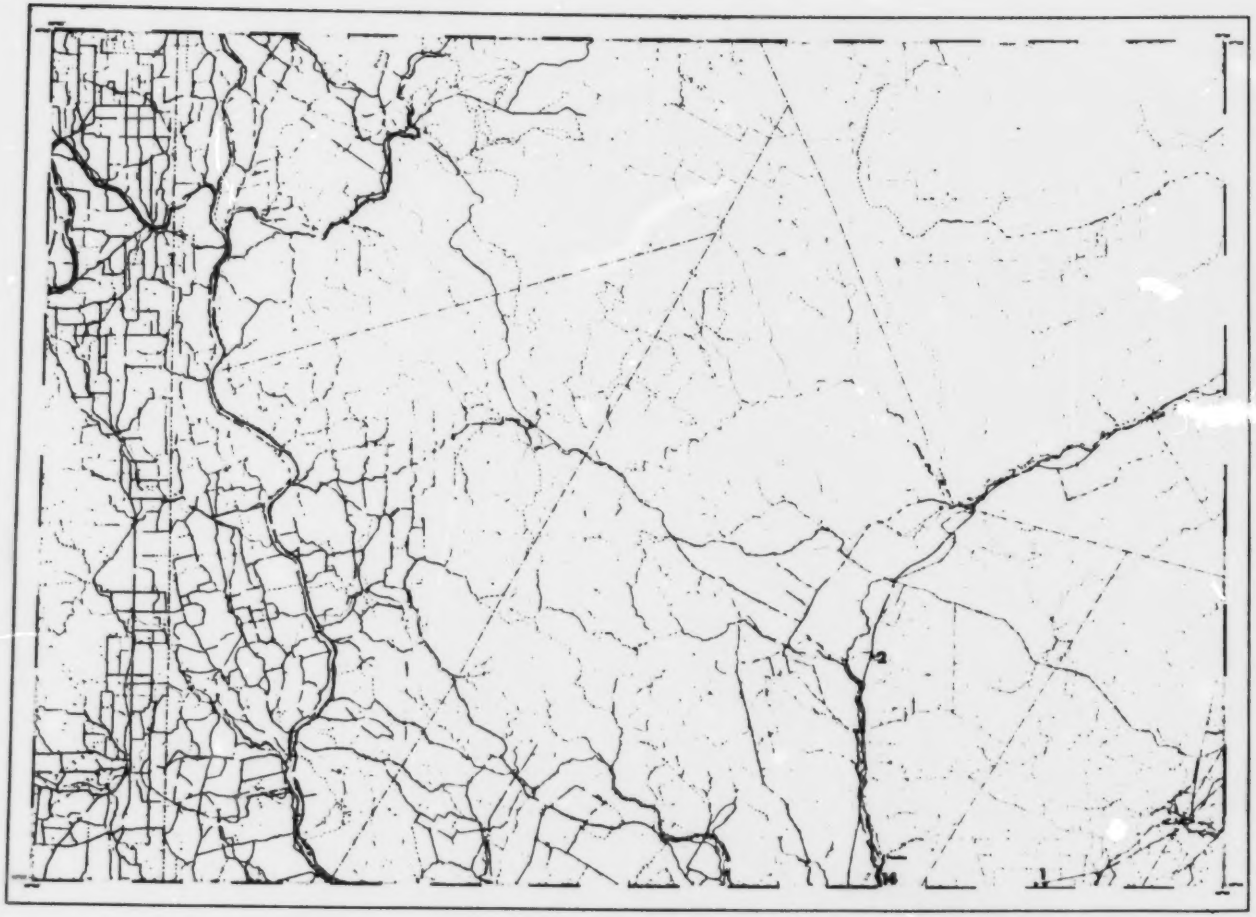


D.N.R.E. PLAT 90-159(R)

REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK 1948 - 1989

MONCTON: MAP SHEET 21 I

LEGEND



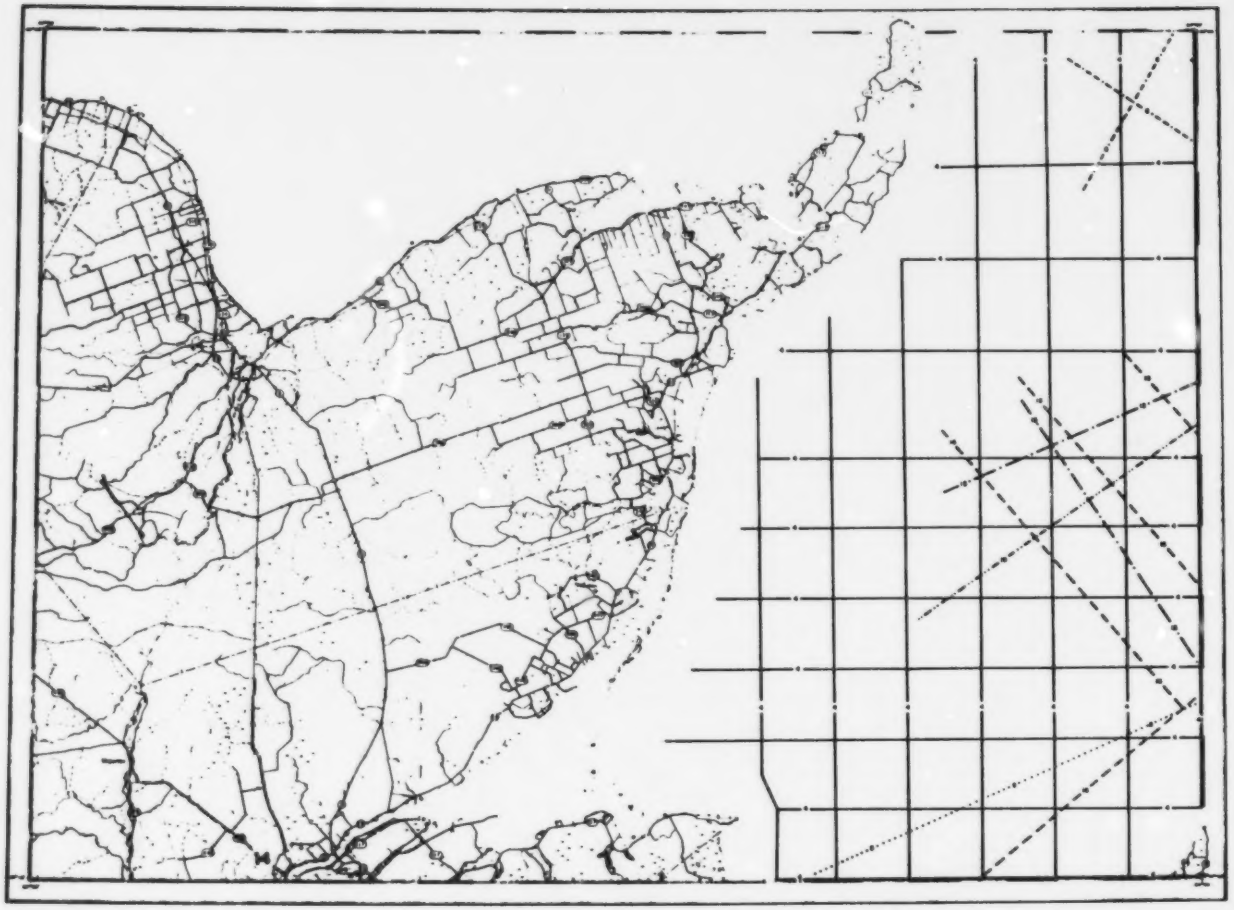
D.N.R.E. PLATE 90-160 (R)

REFLECTION SEISMIC COVERAGE
OF
ONSHORE AND OFFSHORE NEW BRUNSWICK
1948 - 1989

WOODSTOCK : MAP SHEET 21 J

SCALE 1 : 250,000

LEGEND



D.N.R.E. PLATE 90-161 (R)

REFLECTION SEISMIC COVERAGE
OF
ONSHORE AND OFFSHORE NEW BRUNSWICK
1948 - 1989

BATHURST : MAP SHEET 21 P

SCALE 1 : 250,000

LEGEND

Seismic surveys	Symbol	Company	Final field date
Survey lines on Offshore	———	Hudson Bay Oil and Gas Co. Ltd.	1967
	·····	Shell Exploration Co. Ltd.	1967
	—·—·—	Amoco	1968
	—··—··	Societe Quebecoise d'Initiatives Pet.	1970
	— — —	Chevron Standard Ltd.	1981
	—·—·—	Chevron Standard Ltd.	1981
Onshore	— — —	N.B. Dept. of Natural Resources	1979

APPENDIX 2.

OFFSHORE SHALLOW-PENETRATION SEISMIC SURVEYS

The Ocean Mining Division of the Mineral Policy Sector, Energy Mines and Resources Canada, commissioned Earth and Oceans Research Ltd. of Dartmouth, N.S., to identify and index selected samples and seismic data collected in the nearshore of Atlantic Canada. The study area extended from the shoreline out to approximately the 50 m isobath and the acquisition of data was restricted to that outside the mandate of the Bedford Institute of Oceanography. The work completed by Earth and Oceans Research was designed to provide a data base to help plan nonfuel mineral exploration programmes. The surveys listed, their summaries and cited references were excerpted directly from the Earth and Oceans Research (1988) report.

The surveys listed by Earth and Ocean Research and falling within the geographic jurisdiction of this compilation are invariably shallow penetrating. The surveys were undertaken for a variety of reasons, but the primary one was to determine the nature and/or thickness of the unconsolidated sediment and the bedrock profile. Figure 2 identifies the areas in offshore New Brunswick where these surveys were undertaken.

BAY OF FUNDY

1. **Cape Maringouin** (Atlantic Tidal Power Programming Board 1969)

2. **Point Lepreau** (McKay 1974): Closely spaced series of sparker profiles collected for the New Brunswick Electric Power Commission by the Nova Scotia Research Foundation prior to construction of the Point Lepreau Nuclear Power Plant. The study was carried out to investigate the distribution of sediment and bedrock and the bedrock characteristics for water outfall and intake sites.

3. **Point Lepreau** (Stewart 1976): Sidescan sonar, microprofiler, boomer and echosounder data were collected by Geomarine Associates Ltd. in conjunction with the construction of the Point Lepreau Nuclear Power Plant.

4. **Head Harbour Passage and Grand Manan Channel** (Ruffman 1975): High-resolution sparker, ORE Microprofiler and sidescan sonar data collected by Geomarine Associates for the New Brunswick Electric Power Commission. The survey was carried out to examine the seafloor for submarine cable crossings.

5. **Chignecto Bay** (Amos and Asprey 1979)

6. **Cape Spencer** (Cookson et al. 1983): Echosounder, sidescan sonar, subbottom profiler and multichannel seismic data over an 8 km X 8 km grid collected by McElhanney Services Ltd. for Chrevron Canada Resources Ltd. A wellsite survey conducted about the Cape Spencer O-79 well location.

7. **Cape Spencer** (Seabright Resources Inc. 1983): Geophysical studies were undertaken for Seabright Resources Ltd. by Geosea Services Ltd as part of an offshore placer gold exploration program.

8. **Musquash Harbour** (Thaiassic Data Ltd. 1985): Surface-towed boomer survey completed by Can-Dive Services Ltd. on behalf of Ports Canada. Ivestigation of the seabed for suitability as a base for wharf construction.

EAST COAST

9. **Northumberland Strait** (Kranck 1967, 1971, 1972): Echosounder and high-resolution sparker data collected by the Atlantic Oceanographic Laboratory.

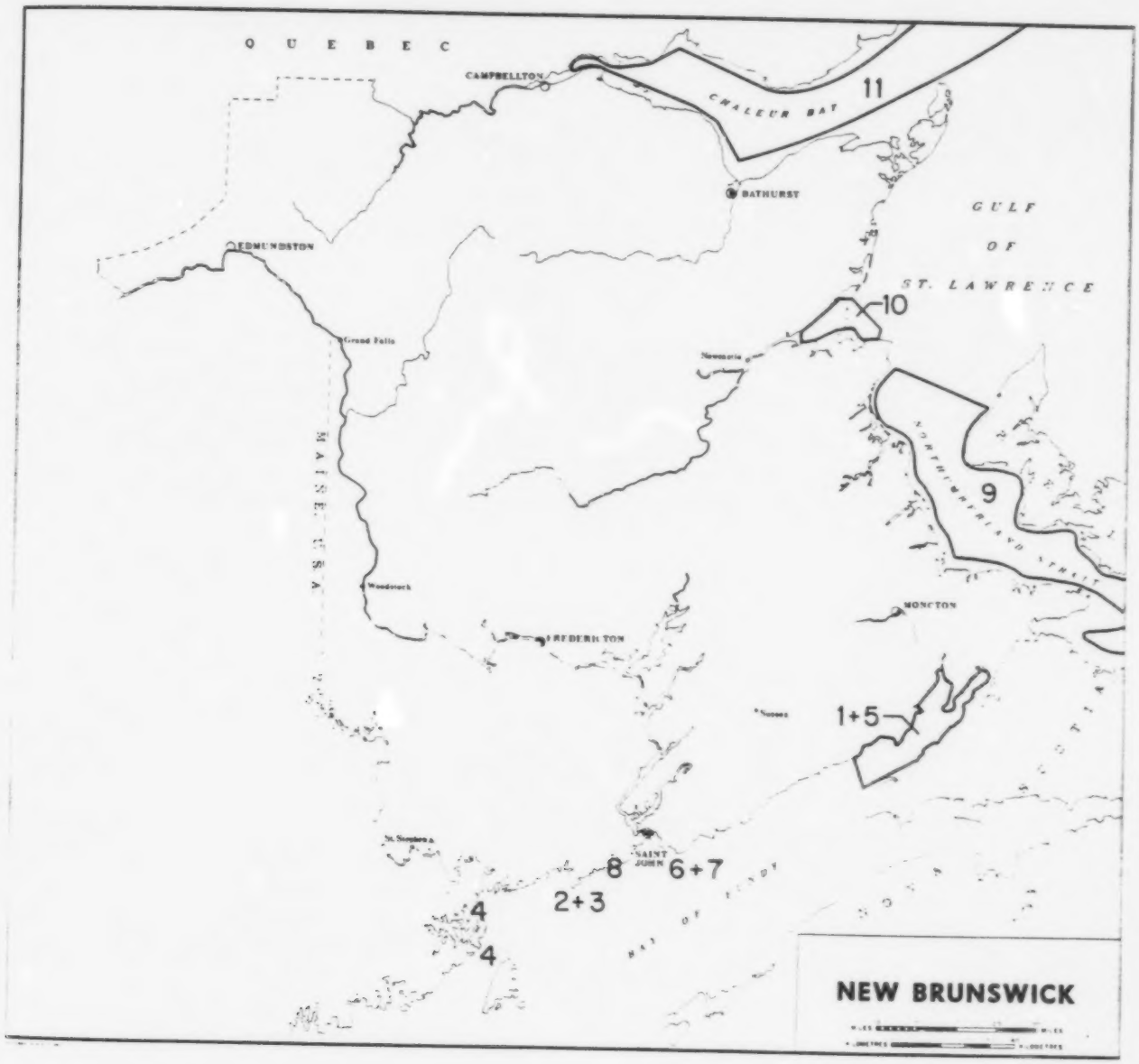


Figure 2. Areas of offshore shallow-penetration seismic surveys.

10. **Miramichi Bay** (Howells and McKay 1977; Philpott 1978): high-resolution sparker and low-frequency echosounder data acquired by the Nova Scotia Research Foundation as part of the Miramichi Channel Study.

11. Baie des Chaleurs (Praeg et al. 1986; Praeg et al. 1987): Airgun, Huntec DTS, Klein sidescan sonar, and echosounder data were collected by the Atlantic Geoscience Centre in 1986 and 1987.